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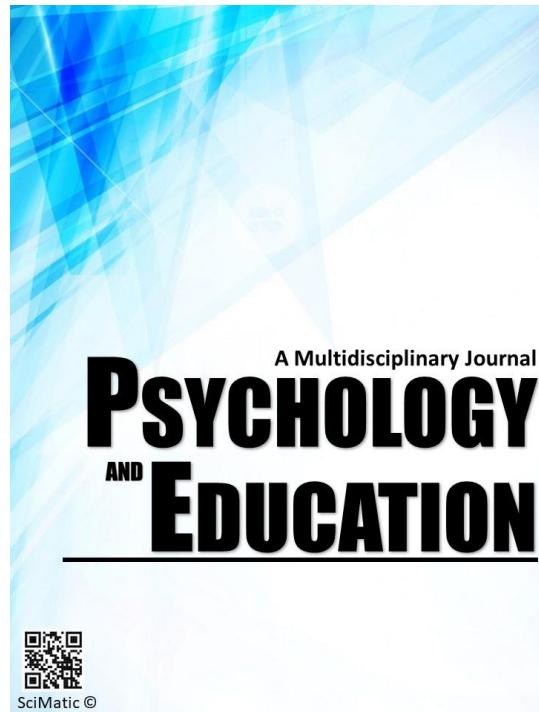


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# **FACTORS AFFECTING THE ACADEMIC PERFORMANCE OF LEARNERS IN MATHEMATICS AMIDST PANDEMIC**



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## Factors Affecting the Academic Performance of Learners in Mathematics Amidst Pandemic

Benjamin F. Mijares III\*

For affiliations and correspondence, see the last page.

### Abstract

The study aimed at investigating the relationship between parental involvement and learners' perceived attitude to their academic performance in Mathematics. To achieve this aim, the researcher used a sample of 134 parents and learners from grades 4-6 at Bungahan Elementary School. The researcher used the descriptive-correlational method of research, which utilized standardized questionnaires from published research. The study clearly revealed that learners' attitudes toward Mathematics do not affect their academic performance in Mathematics. The result of the correlational analysis is that learners' perceived attitudes in Mathematics such as (a) Motivation and Support, (b) Anxiety in Learning, (c) Self-Efficacy in Learning Mathematics do not significantly affect their academic performance in Mathematics as these perceived attitudes got a significant level of greater than 0.05, therefore, the null hypothesis was accepted. However, among the different ways of parental involvement stated in the study, only the mentoring strategies provided by the parents during the indicated school year have been effective in increasing their performance in Mathematics. There is a significant relationship between the mentoring strategies of parents and learners' academic performance;  $p=0.016 (<0.05)$ , which means a p-value smaller than 0.05 suggests that the correlation is statistically significant (at the 5 % level). The correlation coefficient for this is -0.253, which is negative. In other words: as the Mentoring Strategies increase, Learners' Academic Performance decreases. Concerning the strength of the correlation, -0.253 can be said to be weak. Nevertheless, it is critical to investigate how parents can assist and contribute to their children's academic success. Conclusions were drawn and recommendations were offered.

**Keywords:** *parental involvement, academic performance, mathematics, distance learning, pandemic*

### Introduction

The educational setting has been disrupted by the COVID-19 pandemic and this paved the way for the country to shift from face-to-face learning to different alternative learning modalities. To sustain and provide quality education despite the ongoing pandemic crisis, the new normal education was implemented after a series of planning and pilot implementation of different learning modalities. Both teachers and students were forced to adapt to the new way of accessing the body of knowledge as they heavily relied mostly on the use of online resources (Chavez et al., 2020). The Philippines is currently in the process of adapting to the new normal form of education, and educators' continuous innovations, as well as the active participation of other stakeholders, are the driving forces behind its success.

The most common type of distance learning is modular learning. This learning modality is currently used by all public schools in the Philippines because, according to a survey conducted by the Department of Education (DepEd), learning through printed and digital modules emerged as the most preferred distance learning method of parents with children enrolled in this academic year (Bernardo, 2020). This also considers learners in rural areas where the internet is not available for online learning. The teacher oversees

keeping track of the student's progress. The teacher can be contacted by the students via e-mail, phone, text message/instant messaging, and other means. When possible, the teacher should make home visits to students who need remediation or assistance. Modular learning can take the form of printed or digital materials. Modular distance learning, according to Llego (2020), is defined as learners learning at their own pace, in their way, and using self-learning modules (SLMs). It can be in the form of a printed/digitized format/electronic copy for learners, as well as other learning resources such as learners' materials, textbooks, activity sheets, study guides, and other learning materials. Learners can use a computer, tablet PC, or smartphone to access electronic copies of learning materials. E-learning materials, including offline E-books, can be delivered via CDs, DVDs, USB storage, and computer-based applications. The teacher is responsible for keeping track of the student's progress. While learners may seek assistance from them via email, telephone, text messaging/instant messaging, and other means, teachers are required to make home visits to learners who require remediation or assistance in their module. Any member of the family, as well as other community stakeholders, can help. Furthermore, modular learning is a form of distance learning that uses self-learning modules (SLM) and follows the most essential learning competencies (MELCS) provided by DepEd

(Manlangit et al., 2021).

Teaching mathematics through modular distance learning has been a challenge to mathematics educators due to the nature of communication with learners and the availability of material delivery during instruction. Traditionally, mathematics was primarily taught through face-to-face interaction, and the students were able to interact with the materials provided as well as with one another in the classroom. Facing the new normal of education in mathematics teaching is critical for teachers who use various Distance Learning Modalities. It is a significant challenge to convey a teacher's knowledge to students while taking into account the individual's ability to reach out, particularly to those students who cannot afford a cellphone or even buy enough to communicate with them, and vice versa. (Dampog, 2021). Aksan (2021) stressed that there is an impact of the teaching-learning process in new normal education on students' performance above all using modular set up of learning in Mathematics. Because education is no longer confined to the classroom, parents have become educators' partners. As home facilitators, parents play a critical role. In modular learning, their primary role is to establish a connection with the child and to guide them (FlipScience, 2020).

According to Nardo (2017), the utilization of modules advocates self-directed learning. Students with better self-study or learning skills benefit from using modules for learning. Students are engrossed in learning because of the concepts presented in the modules. Students develop a sense of responsibility as a result of the tasks they are given. They were ready to progress on their own. They are empowered as they learn to learn. In addition, the students take part in real-life activities. They learn new things and have their own experiences with their knowledge. Students learn to reflect on their own experiences, allowing them to develop new skills. Learning through modular instruction allows students to take charge of their education. On the other hand, Bijeesh (2017), emphasized that if students are not surrounded by teachers and classmates who remind them of their responsibilities, they are more likely to become distracted and lose track of deadlines. Furthermore, Dangle and Sumaoang (2020) revealed the main challenges that arose in the implementation of modular distance learning, including a lack of budget for the creation and delivery of modules; students having difficulty answering their tasks on their modules; and parents lacking academic knowledge to guide their children.

This pandemic has paved the way for the implementation of different learning modalities like Modular Distance Learning as an urgent response to ensure the continuity of education. The key purpose of this research is to determine the effects of the identified factors such as parental roles, learners' attitudes toward Mathematics, and strategies of teachers on the academic performance of intermediate learners in Mathematics using the Modular Distance Learning Modality at Bungahan Elementary School. The respondents are the parents, teachers as well as learners of Grade 4, 5, and 6 who are currently enrolled during the school year 2021-2022.

## Research Questions

This study aimed to determine the factors affecting the academic performance of intermediate learners in Mathematics. Specifically, the study seeks an answer to the following questions:

1. How may the teacher's strategies in response to education times of the pandemic be described?
  - 1.1 Utilization of a variety of teaching strategies and resources
  - 1.2 Information, communication, and technology skills for online and offline instruction
  - 1.3 Student assessment and evaluation skills in the new normal
  - 1.4 Interpersonal communication skills
  - 1.5 Self-management skills
2. How may parental involvement be described in terms of the following categories?
  - 2.1 Mentoring strategies
  - 2.2 Parental involvement strategies
  - 2.3 Awarding recognition strategies
  - 2.4 Awarding scheme strategies
3. How may a learner's perceived attitude towards mathematics be described?
  - 3.1 Perceived motivation and support
  - 3.2 Perceived anxiety in learning mathematics
  - 3.3 Perceived self-efficacy in learning mathematics
4. How may a learner's academic performance in Mathematics be described based on their general weighted average?
5. Is there a significant relationship between parental involvement in the academic performance of learners in Mathematics?
6. Is there a significant relationship between the students' perceived attitudes in the academic performance of learners in Mathematics?

## Literature Review

### Parental Involvement in Increasing Learners' Academic Performance

Improving the educational success of all students is an essential educational goal that has received a lot of public attention. As a result, it is critical to identify the influence factors that promote academic success as well as the pathways through which they operate. A study conducted by Xiong (2021) said that many researchers pointed out that parental involvement is one promising avenue for improving students' academic outcomes. Parents play a critical role in their children's education. Studies have shown that when parents are more involved in their children's education, they achieve better results. According to the Department of Education (DepEd), parents and guardians perform varied roles in Modular Learning like Module-ator, Bundy-clock, and Home Innovator. As a Module-ator, they're liable for collecting and submitting printed Self-Learning Modules (SLMs) from and to schools or barangay halls at the beginning and end of every week, as agreed by the parents and the school. They must check their child's schedule or workweek plan as a Bundy-clock. Due to a large number of subjects or activities to be completed, they must ensure that all procedures are followed to avoid cramming or delays in submission, which could negatively impact the child's performance. Finally, as Home innovators, they must provide a productive learning environment for their children to help them focus more on learning. It must be a well-lit, well-ventilated space with little or no distractions in the house (Nalagon, 2021).

There is an outsized and growing body of evidence showing that parental engagement in children's learning is related to higher levels of attainment among children. According to Mathipa (2014), the level of commitment to parental support and the level of parental activity and participation are the two key elements that contribute to the concept of parental involvement. This is supported by the study conducted by Cai et al., (2016) that students with the most supportive parents not only have higher proficiency levels but are also more positive toward mathematics than those with the least supportive parents. Aquino et al., (2019) concluded that the academic performance of students in Mathematics is influenced by parental involvement strategies, but only to a minor extent. The role of parents within the entire journey of their child's education is one biggest attributes and contributory factors to their success. Good quality home learning

contributes more to children's intellectual and social development than parental occupation, education, or income. A parent's attitudes, aspirations, and behavior are all important, as is their ability to know their child's day-to-day progress, undertake family learning together, and talk regularly with their child about their learning (Dampog, 2021).

### Attitudes of Learners towards Mathematics

Several studies have identified various factors that contribute to students' poor math performance. Tudy (2014) studied Filipino students and discovered that only attitudes toward mathematics had a significant influence on the student's academic performance. Students who have a positive attitude toward the subject perform better. As a result, developing a positive attitude toward mathematics can help students in the Philippines improve their math performance. One factor affecting the academic performance of learners is certainly their anxious attitude. Anxiety is defined in the dictionary as "sadness, concern/distress, worry" Language Association (TDK), 2019. ( Turkish ). Anxiety is a component of mental, physical, and affective behaviors, according to Aydn and Tiryaki (2017). Anxiety is commonly thought to have only a negative connotation, but this is not the case. When anxiety is under control, it is extremely beneficial to the learning process and has a feature that stimulates the individual positively. While anxiety is a level problem, low and high levels of anxiety are not desirable; however, anxiety at a moderate level plays an important role in directing an individual to performance (Tuncer and Tilmaz, 2020).

Several studies have been conducted to determine what factors influence students' attitudes toward mathematics. Math-self efficacy, math anxiety, motivation, parental influences, effective teacher support, and classroom instruction are some of these factors (Vukovic et al., 2013). Teachers have the greatest influence on students' perceptions of mathematics. Teachers' attitudes are not always consistent, and they can differ from one another. Teachers who engage students in hands-on activities with real-world applications, make them feel supported, demonstrate a passion for the subject, and provide one-on-one attention have a positive impact on student's attitudes toward mathematics (Kelly, 2011). Teachers used a variety of strategies to improve students' attitudes toward mathematics. Technology-assisted instruction, for example, improved students' attitudes toward the subject (Choi et al., 2013). Even social networking sites aided in the improvement of students' grades. Gregory et al., (2014) discovered that



Facebook group members are more interested in mathematics. The use of a drawing activity has a positive impact on students' math performance (Arhin & Osei, 2013). The method of guided hyper-learning was also effective (Fathurrohman et al., 2013). Context personalization improves academic performance in mathematics, according to Walkington, Petrosino, and Sherman (2013). Nonetheless, the issue of poor performance persists. One of the reasons why students struggled in math was their attitude toward the subject. According to some studies, students' attitudes are strongly linked to their academic performance (Parker et al., 2013).

### Implementation of Modular Distance Learning in the Philippines

Due to the COVID-19 pandemic, face-to-face learning engagement of students and teachers within the school has been suspended. This pandemic paved the way for the implementation of Modular Distance Learning as an immediate response to ensure learning continuity. The Philippines is currently in the process of adapting to the new normal form of education, and educators' continuous innovations, as well as the active engagement of other stakeholders, were the driving forces behind its success. The most common type of Distance Learning is modular learning. This learning modality is currently used by all public schools in the Philippines because, according to a survey conducted by the Department of Education (DepEd), learning through printed and digital modules emerged as the most preferred distance learning method of parents with children enrolled in this academic year (Bernardo, 2020). Nardo (2017) revealed that modular learning fosters a sense of responsibility in students, thereby increasing learner autonomy. Eventually, Valencia (2020) discovered that modular learning improved learners' academic performance in her study on modular learning in basic education.

This also takes into account learners in rural areas where the internet is not available for online learning. Lack of school funding in the production and delivery of modules, students' struggles with self-studying, and parents' lack of knowledge to academically guide their child/children were the main challenges that emerged. (Dangle and Somoang, 2020). While most studies revealed that technology use and competency were the most common challenges that students face during online classes (Rasheed et al., 2020), the situation in developing countries during pandemics is a bit different. The learning environment is the most difficult obstacle that students must overcome, particularly distractions at home (e.g., noise) and

limitations in learning space and facilities. This data suggests that the challenges of online learning during the pandemic differ from the typical challenges that students face in a pre-pandemic online learning environment (Day et al., 2021; Kapasia et al., 2020).

The implementation of modular distance learning brought issues when it came to learners' commitment to answering their modules at home. Some parents answer the modules in place of their children for a variety of reasons. Some work from home in an online working environment, while others are so preoccupied with chores and other household tasks that instead of teaching their children with the modules, they are the ones answering them (Anzaldo, 2021). Talimodao and Madrigal (2021) emphasized that teachers faced major challenges in implementing printed modular distance learning due to parents' incapacity, inconsistent participation, and compliance. This implies that teachers recognize the importance of parental involvement in students' academic success. Furthermore, knowing that parents or guardians serve as learning facilitators who not only co-supervise and co-monitor pupils but also receive and return self-learning modules to schools has a significant impact on the academic progress of the learners. Such inconsistent participation and compliance delay learners' accomplishment, which may have a negative impact on the flexibility of printed modular distance learning. It is critical for future remote learning efforts to educate parents about the system and platforms for remote learning, including the tools, key pedagogical concepts, and teacher-student-parent communication options (Garbe et al., 2020). Meanwhile, online learning widens the digital divide in developing countries, particularly in rural areas with poor internet access. Because of the prevalence of the digital divide among students, students who are unable to access online classes have a greater learning disruption than their classmates who are not subject to such technological barriers.

Asio and Jimenez (2020) emphasized that remediation and intervention have a significant impact on the academic performance of pupils. Remediation provides opportunities for our students to gain the skills they need to be equipped and ready for the next step in their journey. This is supported by the study conducted by Barrantes and Tamoria (2021), which strongly suggests that the more technology-based activities presented to pupils, the more chances they perform, so the mastery of skills increases. Students benefit more from digital literacy as it allows them to learn more effectively (Baterna et al., 2020). The students had the easiest time with technological

### Distribution of Teacher-Respondents

literacy and competency out of all the different online learning challenges. This is not surprising given the wealth of research demonstrating the high technological and digital literacy of Gen Z students (born after 1996) (Ng, 2012; Barrot, 2018; Roblek et al., 2019).

## Methodology

The study used descriptive-correlational design, which aimed to determine the relationship between the factors affecting the academic performance of learners in Mathematics. A correlational study design, according to Asuero et al. (2006), entails gathering data to ascertain whether and how much a relationship exists between two or more variables.

## Participants

The focus of the study was on the teachers, parents, and learners of key stage 2 level which comprised of Grade 4, 5, and 6, who were under the implementation of distance learning during the school year 2021-2022. The respondents of the study consisted of 134 learners, 134 parents and guardians and 6 teachers during the school year 2021-2022. The following tables shows the distribution of the respondents.

### Distribution of Respondents-Learners

Grade Level	Gender		Total	%
	Male	Female		
Grade 4	30	18	48	36%
Grade 5	27	20	47	35%
Grade 6	18	21	39	29%
Total	75	59	134	100%

The table above shows the percentage distribution of learners who were enrolled in the school year 2021-2022. The student-respondents were comprised of key stage 2 learners identified as grade 4,5, and 6 learners. A total of 134 learners were able to become part of the study.

Grade Level	Gender		Total	%
	Male	Female		
Grade 4	0	2	2	33.3%
Grade 5	0	2	2	33.3%
Grade 6	1	1	2	33.3%
Total	1	5	6	100%

The table represents the percentage distribution of teachers who taught Math subjects in the school year 2021-2022. A total of six teachers were able to become part of the study.

### Distribution of Parent/Guardian Respondent

Grade Level	No. of Parents/Guardians	Total	%
Grade 4	48	48	36%
Grade 5	47	47	35%
Grade 6	39	39	29%
Total	134	134	100%

The table above shows the percentage distribution of parents or guardians who participated in the study. A total of 134 parent/guardian respondents were able to become a part of the study.

## Instruments of the Study

The researcher used survey questionnaires as the main data-gathering tool for this study. The instrument consisted of three questionnaires intended for parents, learners, and teachers. Teachers were given a questionnaire to collect their profiles and their learning strategies that is conditioned by levels of preparedness from various perspectives such as (1) utilization of a variety of teaching strategies and resources, (2) Information, communication, and technology skills for online and offline instruction, (3) Student assessment and evaluation skills in new normal, (4) Interpersonal communication skills, and (5) Self- management skills. This research instrument was adopted from the study conducted by Agaloos et al., (2020) entitled “Preparedness of Teachers to the New Normal Learning in the Schools Division of Pangasinan II –“ and was validated by three experts and was interpreted as “highly valid”.

The questionnaire for parents was adapted from the published research study conducted by Aquino et al.,



(2019) entitled “Parental Involvement Strategies Vis-à-Vis Academic Performance of Junior High School Students in Mathematics”. This instrument used a 5-point Likert scale with responses such as 5-Always, 4-Frequently, 3-Sometimes, 2-Rarely, and 1-Never. The expected value for the computed coefficient must be greater than 0.700 to qualify as “reliable” and the resulting Cronbach's alpha is 0.913 which confirms that the questionnaire is reliable. The questionnaire for learners was adopted from the Mathematics Attitude Scale (MAS) developed by Facultad and Sevial (2019). This instrument was used to measure the attitude of intermediate learners toward Mathematics in the context of the new normal setting. This instrument is designed as a Five-Point Likert Scale. The options of this scale are the following: 5-Strongly Agree, 4-Agree, 3-Undecided, 2-Disagree, and 1-Strongly Disagree. The “Students’ Perceived Motivation and Support in Learning Mathematics”, “Students’ Perceived Anxiety in Learning Mathematics”, and “Students’ Perceived Self-Efficacy in Learning Mathematics” have Cronbach Alpha values of 0.729, 0.766, and 0.776 respectively. It only means that the questionnaires used were reliable. This questionnaire was translated into Filipino to help other learners answer the survey accordingly. Both parents and guardians were assisted by the teachers in answering the questionnaires virtually through the use of Google Meet and some were guided personally during the delivery and retrieval of learning modules.

Lastly, the academic performance of the learners was measured using the average grade from the First to Fourth quarters. The grades were retrieved with the help of their subject teachers. The profile of students’ academic performance was examined using frequency counts and percent interpreted.

## Procedure

The survey questionnaire method was used to gather data based on the following procedures: (1) A letter of request was sent to the school head to ask for permission to conduct the study. (2) With the approval of the concerned personnel, survey questionnaires for parents and learners were retrieved by the parents during the delivery and retrieval of learning modules. (3) The collected data were evaluated using the software SPSS version 24 to obtain both descriptive and inferential results.

## Ethical Considerations

This research considered the ethical standards set by generic research ethics. In so doing, the participants

were informed about all the steps that will be taken in this research. The participants are more important than the study, and therefore always respected. They were informed that the study is completely voluntary and would not affect their lives as students and as persons, even their families, in any way. Confidentiality was the researchers’ top priority until the completion of the study.

## Results

This section of the research shows the results of the study in relation to both research questions and existing knowledge following the sequence of the research objectives: (a) to determine the teacher’s strategies in response to education times of the pandemic; (b) to identify the level of parental involvement; (c) to evaluate the perceived attitudes of learners towards Mathematics; (d) to determine the academic performance of learners in Mathematics; e) to assess the significant relationship that exists between parental involvement and learners’ perceived attitudes to their academic performance in Mathematics.

Table 1.1. *Teacher's strategies in response to education in times of pandemic are described in terms of the Utilization of a variety of teaching strategies*

Indicators	Mean	Verbal Interpretation
1. Applying knowledge on the development and utilization of various learning resources and other localized materials available at home for learning.	4.50	Very Great Extent
2. Providing appropriate assistance to qualified parents, tutors, and household partners on different teaching strategies to improve learners’ academic performance and independent learning.	4.17	Great Extent
3. Using and applying effective strategies in providing learners academic support in the different learning delivery modalities (i.e. modular learning modality, online learning modality, homeschooling, etc.)	4.50	Very Great Extent
4. Crafting well-prepared and suitable weekly lesson plans aligned with the most essential learning competencies, content standards, and performance standards.	4.17	Great Extent
5. Utilizing expertise in the use of web-based assignments (online and offline) and educational-open resources in developing accurate and appropriate learning-teaching outputs.	4.17	Great Extent
Overall Mean	4.30	Very Great Extent

and resources

Table 1.1 presents the teacher’s strategies in response to education in times of pandemic be described in terms of the Utilization of a variety of teaching strategies and resources. Data revealed the overall



mean of the study which is 4.30 is interpreted as a “Very Great Extent”. This implies that teachers responded well to the call of service amidst the pandemic by providing a variety of teaching strategies and resources for students who are learning at home. In a study conducted by Agayon and Pentang (2022), it is proven that teachers have faced significant challenges in terms of learning quality transfer, module distribution and retrieval, students' difficulties following teaching, power outages, internet connectivity, and the pandemic's health concerns. However, they overcame these challenges by using their own coping mechanisms. Even in these trying times, teaching can be difficult and frustrating, but as teachers have proved, anything is possible.

*Table 1.2. Teacher's strategies in response to education in times of pandemic are described in terms of Information, Communication, and Technology Skills for Online and Offline Instruction*

Indicators	Mean	Verbal Interpretation
1. Applying knowledge of basic computer and digital literacy (i.e., use of Microsoft Office programs and other word-processing applications on the Internet).	4.33	Very Great Extent
2. Conducting engaging online activities both asynchronously and synchronously.	4.67	Very Great Extent
3. Searching and connecting to the Internet and can perform other computer and digital skills (i.e., browsing educational portals, copying and downloading web documents, etc.).	4.67	Very Great Extent
4. Setting realistic rules and procedures for the academic and behavioral performance of learners at home during virtual meetups/ classes.	4.67	Very Great Extent
5. Applying skills in technicalities with the use of innovative technologies, equipment, and devices for discussions.	4.67	Very Great Extent
Overall Mean	4.60	Very Great Extent

Table 1.2 presents the teacher's strategies in response to education in times of pandemic be described in terms of Information, communication, and technology skills for online and offline instruction. The overall mean interpreted as ‘Very Great Extent’ shows how the teacher's response to the need for proper instructions toward students learning is evidenced by the overall mean value of 4.60. As mentioned in the research conducted by Mijares (2022), teachers have developed information, communication, and technology skills even before the pandemic started, it was then maximized since the educational setting required them to utilize both online and offline instruction.

*Table 1.3. Teacher's strategies in response to education in times of pandemic are described in terms of Student Assessment and Evaluation skills in the New Normal*

Indicators	Mean	Verbal Interpretation
1. Using relevant, meaningful, and timely assessment strategies appropriate to the chosen learning delivery modality (i.e. standard and modified rubrics, online quizzes, etc.)	4.50	Very Great Extent
2. Determining points to enhance the teaching and learning process in the new normal education.	4.67	Very Great Extent
3. Applying familiarity in administering remedial instruction in the new normal learning addressing the least mastered competencies	4.67	Very Great Extent
4. Employing approaches in providing guidance and assistance to both parents and learners in the preparation of student portfolios as proof in assessing learners' performance.	4.50	Very Great Extent
5. Monitoring students' progress and establishing linkages with parents and household partners through different modes of communication (i.e. SMS, FB messenger, phone calls, etc.).	4.67	Very Great Extent
Overall Mean	4.60	Very Great Extent

Table 1.3 presents the teacher's strategies in response to education in times of pandemic be described in terms of student assessment and evaluation skills in the new normal. It shows that the teacher's response is to a “Very Great Extent” in measuring students' understanding by applying varied strategies as evidenced by the overall mean value of 4.60. Teachers have adopted the DepEd Order No. 031 s. 2020 “Interim Guidelines for Assessment and Grading in Light of the Basic Education Learning Continuity Plan”. This is where the guidelines in assessing and evaluating student written outputs and performance tasks are stipulated. This was released to provide guidance on the assessment of student learning and on the grading scheme for the school year 2020-2021. Cahapay (2020) emphasized that assessment practices were contextually reshaped because classes were suspended when assessment evidence could not be computed; limited internet connectivity posed logistical challenges in moving to online assessment.

Table 1.4. Teacher's strategies in response to education in times of pandemic are described in terms of Interpersonal Communication Skills

Indicators	Mean	Verbal Interpretation
1. Using appropriate verbal and non-verbal means of communication suitable to the new normal education.	4.83	Very Great Extent
2. Sharing responsibilities to parents in improving the academic and behavior performance of learners through proper channeling of communication.	4.83	Very Great Extent
3. Reaching out to learners through direct contact and conversation following health protocols if needed and suitable to the situation.	4.83	Very Great Extent
4. Providing immediate feedback to learners and parents via different platforms (ig. SMS, FB, messenger, or face-to-face if needed while observing proper health protocols).	4.50	Very Great Extent
5. Using words of appraisal to sustain interest in learning in the new normal.	4.83	Very Great Extent
Overall Mean	4.77	Very Great Extent

Table 1.4 presents the teacher's strategies in response to education in times of pandemic be described in terms of Interpersonal communication skills that have an overall mean value of 4.77 interpreted as 'Very Great Extent'. This means that the following indicators are well utilized by teachers to reach out to their students. It is evident that for almost two years, lack of student-teacher communication is one of the major challenges faced by teachers. Teacher communication with families shifted in response to the pandemic, and this was a particular source of concern for teachers due to variations in household environments and their capacity to support online education. Teachers reported more difficulty reaching families where access to technology was more limited (Stelitano et al., 2020).

Table 1.5. Teacher's strategies in response to education in times of pandemic are described in terms of Self-Management Skills

Indicators	Mean	Verbal Interpretation
1. Setting realistic and achievable goals in teaching specifically, distance learning and teaching.	4.83	Very Great Extent
2. Planning activities ahead of time and managing time well asynchronously and synchronously.	4.83	Very Great Extent
3. Applying appropriate levels of effort to various tasks amidst challenges and difficulties to fulfill duties and responsibilities in the new normal education.	4.83	Very Great Extent
4. Regulating emotions and behaviors effectively in distressful situations at work to support goal pursuit in the new normal education.	4.83	Very Great Extent
5. Paying attention to details and possessing careful and precise work habits appropriate to the new normal education.	4.83	Very Great Extent
Overall Mean	4.83	Very Great Extent

Table 1.5 presents the teacher's strategies in response

to education in times of pandemic be described in terms of Self-Management Skills. The overall means is interpreted as a "Very Great Extent" as evidenced by the overall mean value of 4.83. This implies that the teacher respondents manage themselves professionally in exercising their duty during the new normal. However, it is advised that teachers must receive training on stress management, distance learning, and time management to avoid or be less affected by negative effects like pandemics without field limitations. This is because the COVID-19 process has a negative impact on time management (Cengizhan, 2021).

Table 2.1. Parental Involvement in terms of Mentoring Strategies

Indicators	Mean	Verbal Interpretation
Assist your child in doing their assignments.	4.08	Frequently
Tutoring children in subjects they find difficult.	4.19	Frequently
Sharing stories or books with your child at home.	3.79	Frequently
Reminding your child about the importance of going to school	4.82	Always
Conversing with your child about what happened in school after his/her class before going to sleep.	4.54	Always
Overall Mean	4.28	Always

Table 2.1 presents the parental involvement in terms of monitoring strategies which has an overall mean of 4.28 described as "Always". This indicates that parents are in full support of the learning of their children. This is the same as the findings of the study conducted by Garen et al., (2021) which shows that parents are more interested in talking to their children than rather than working together and making decisions with the school community, the teachers, and the institution. Most parents are also found to be quite involved in guiding and helping their kids, according to the studies. Despite the advantages, they also encountered difficulties, with time management being the most frequent one. Parental involvement is generally how the parents see it. as important and advantageous to their child's education. They actively interact with their kids as a result, which strengthens the parent-child relationship.

Table 2.2. Parental involvement in terms of parental involvement strategies



Indicators	Mean	Verbal Interpretation
Participating in school programs when invited by the school (e.g., family day)	4.39	Always
Attending regular progress meetings with teachers (e.g., showing or report card)	4.52	Always
Initiating to have meetings with other parents for an activity that would benefit the children.	4.11	Frequently
Doing volunteer work for the school (e.g., cleaning drive, bringing refreshments during activities, sharing stories with your child's class).	3.74	Frequently
Initiating small talks with teachers about the progress of your child in school.	3.93	Frequently
Overall Mean	4.14	Frequently

Table 2.2 shows the parental involvement in terms of parental involvement strategies. The overall mean value is 4.14 interpreted as “Frequently”. This result shows a positive response to parents’ active participation in shaping and monitoring their child’s achievement in school. This is explained in the research of Lirio et al., (2022) which discussed that pandemic has made it more difficult for parents to balance employment and involvement in their children’s extracurricular activities. Parents must assume more responsibility because of the switch from traditional to online schooling, responsibilities in their children’s educational processes and support the family in unforeseen situations (Harris, 2020). Datu and Episcope (2021) noted that to give their children the resources they need for their studies, it was advised that parents should get more active in their children’s education.

**Table 2.3. Parental Involvement in terms of Awarding Recognition Strategies**

Indicators	Mean	Verbal Interpretation
Recognizing good performance of children in achievement test	4.54	Always
Giving recognition to the meritorious accomplishment of the child.	4.32	Always
Holding simple events recognizing curricular and co-curricular achievements of the child.	4.12	Frequently
Publicizing the achievement of children on social media like FB, IG, and Twitter	3.73	Frequently
Displaying congratulatory messages (like tarps) for outstanding achievements of the children.	3.44	Frequently
Overall Mean	4.03	Frequently

Table 2.3 presents parental involvement in terms of awarding recognition strategies. Data revealed the overall mean of the study which is 4.03 interpreted as “Frequently”. This means that parents don’t fail to recognize their child’s effort and show appraisal towards the child’s achievement.

**Table 2.4. Parental Involvement in terms of Awarding Scheme Strategies**

Indicators	Mean	Verbal Interpretation
Giving monetary rewards for good performance of children	4.06	Frequently
Extending non-monetary rewards like educational trips and travels for outstanding performance in school.	3.63	Frequently
Granting independence and freedom on study methods.	4.20	Always
Rewarding with a letter of appreciation.	3.67	Frequently
Handling out a tangible gift.	3.88	Frequently
Overall Mean	3.88	Frequently

Table 2.4 presents parental involvement in terms of awarding scheme strategies which has an overall mean of 3.88 interpreted as ‘frequently’. This implies that parents frequently find ways to make their children happy and this also serves as a positive reinforcement to make the child want to achieve more in school. Recognition has a positive impact on student retention and academic success. Additionally, it shows that a positive impact occurs after a student is recognized for their efforts. They become more motivated, have a stronger intention, and expend more effort and energy to successfully complete their courses and graduate on time (Bliven, 2021).

**Table 3.1 Learners’ Perceived Motivation and Support**

Indicators	Mean	Verbal Interpretation
It is important and valuable for me to get high grades in mathematics.	4.48	Strongly Agree
I seek the help of others if I find difficulty in learning mathematics.	4.26	Strongly Agree
Learning mathematics can assist me to find an excellent career in the future.	4.52	Strongly Agree
Learning mathematics will develop me as a critical thinker.	4.64	Strongly Agree
My parents think learning mathematics is important.	4.31	Strongly Agree
My parents are happy to see my good grades in mathematics.	4.50	Strongly Agree
I am interested to learn mathematics when my teacher praises me.	4.28	Strongly Agree
My teacher encourages me to learn mathematics.	4.46	Strongly Agree
I like to learn math with my approachable teacher.	4.59	Strongly Agree
I learn mathematics more with the help of my supportive teacher.	4.60	Strongly Agree
My teacher gives positive feedback that boosts my confidence to perform better in my math class.	4.42	Strongly Agree
I like to engage in math discussions if the topic interests me.	4.12	Agree
Overall Mean	4.43	Strongly Agree

Table 3.1 presents learners’ perceived motivation and support. The overall mean is interpreted as “Strongly Agree” as evidenced by the overall mean value of 4.43. This means that the following indicators are ways to help the student respondents become

motivated to learn mathematics despite the difficulty of the subject matter. It is showed that learning mathematics through engaging virtual media is the most common type of intrinsic motivation to learn. Curiosity, needs, interests, and satisfaction are more examples of intrinsic motivation. Extrinsic motivation comes from rewards and well stated learning goals. For pupils, learning is most fun when they believe they are learning more than they are. The complexity of the learning enhances this level of enthusiasm. The students are more engaged and eager to study (Tabuena & Pentang, 2021)

*Table 3.2. Learners' Perceived Anxiety in Learning Mathematics*

Indicators	Mean	Verbal Interpretation
I am usually uneasy in math classes.	3.50	Agree
I am not good at mathematics.	3.30	Neutral
I study math but it seems difficult for me.	3.52	Agree
My mind becomes blank and unable to think clearly when working in mathematics.	3.14	Neutral
I hate mathematics subject.	2.64	Neutral
I cannot solve difficult math problems.	3.12	Neutral
I feel worried that I will not be able to answer the test in mathematics subject.	3.42	Agree
I get tense when there is an announcement of the schedule of the math test.	3.26	Neutral
I get nervous when taking a mathematics test.	3.24	Neutral
I like to solve new mathematical problems.	3.90	Agree
Overall Mean	3.31	Neutral

Table 3.2 presents learners' perceived anxiety in learning Mathematics. Data revealed that the overall mean is 3.31 described as "Neutral". This indicates that students' anxiety in learning Mathematics is not high nor low. It is stated in the research conducted by Ablian and Paranga (2022) that students reported feeling anxious while learning mathematics. Students stated that mathematics is a difficult and complex subject, and that they do not possess the mathematical abilities necessary to handle challenging problems.

*Table 3.3. Learners' Perceived Self-Efficacy in Learning Mathematics*

Indicators	Mean	Verbal Interpretation
I believe I can do good in mathematics.	4.43	Strongly Agree
I think I am the type of student who actively participates in math activities.	3.84	Agree
I believe I can get a good grade in a mathematics subject.	4.14	Agree
I work hard in my mathematics classes.	4.31	Strongly Agree
I believe I can understand mathematical concepts.	4.21	Strongly Agree
I love solving mathematics problems.	3.97	Agree
Overall Mean	4.15	Agree

Table 3.3 presents the learners' perceived self-efficacy

in learning Mathematics. The overall mean is 4.15 which is described as "Agree". This implies that respondents have a high level of self-efficacy toward Mathematics. Higher academic performance is associated with a more positive attitude, a higher level of self-efficacy, and a higher level of motivation in mathematics. It is suggested that maintain very satisfactory performance, there should be a close monitoring and intervention plan between administrators, teachers, parents, stakeholders, and learners (Paguican and Torreon, 2022).

*Table 4. Learner's Academic Performance in Mathematics as described based on their General Weighted Average (GWA)*

Scale	Frequency	Percentage
Outstanding (90-100)	26	29
Very Satisfactory (85-89)	39	43
Satisfactory (80-84)	25	28
Total	90	100

Table 4 shows the learner's academic performance in mathematics was described based on their general weighted average. It appears that 26 or 29% of respondents who obtained a grade within 90-100 were described as "Outstanding", 39 or 43% obtained an 85-89 grade described as "Very Satisfactory", and 25 or 28% obtained a grade of 80-84 describes as "Satisfactory". This suggests that most of the respondents obtained a grade between 85-89.

*Table 5. Significant relationship between Parental Involvement to the Academic Performance of Learners in Mathematics*

Source of Relationship	Computed R	p-value	Decision	Interpretation
Mentoring strategies	-0.253	0.016*	Reject Ho	Significant Relationship
Parental Involvement Strategies	-0.061	0.566	Accept Ho	No Significant Relationship
Awarding and Recognition Strategies	-0.125	0.241	Accept Ho	No Significant Relationship
Awarding Scheme Strategies	-0.170	0.109	Accept Ho	No Significant Relationship

Table 5 shows the relationship between Parental Involvement to the Academic Performance of Learners in Mathematics. As shown in the table, there is a significant relationship between the Mentoring Strategies and learners' Academic Performance;  $p=0.016 (< 0.05)$ , which means a p-value smaller than 0.05 suggests that the correlation is statistically significant (at the 5 % level). The correlation



coefficient for Mentoring Strategies and Learners' Academic Performance is -0.253, which is negative. In other words: as the Mentoring Strategies increase, Learners' Academic Performance decreases. Concerning the strength of the correlation, -0.253 can be said to be weak.

The results of the study clearly revealed that learners' attitudes toward Mathematics do not affect their academic performance in Mathematics. However, among the parental involvement stated in the study, only the mentoring strategies provided by the parents during the indicated school year have been effective in increasing their performance in Mathematics. This is supported by the study conducted by Borres (2017), which emphasized that parental involvement with their children is very essential. Aquino et al., (2019) state that parental involvement practices have a limited impact on student's academic performance in mathematics, and Leander et al., (2020) suggested that parental involvement is crucial for improving students' academic performance, particularly for those who were determined to have received unsatisfactory marks. The goal of the partnership between the school and the parents could be to increase the learners' academic performance.

**Table 6. Significant Relationship between the Mathematics Attitude Scale of Students to their Academic Performance in Mathematics**

Source of Relationship	Computed R	p-value	Decision	Interpretation
Students' Perceived Motivation and Support	0.001	0.994	Accept Ho	No Significant Relationship
Students' Anxiety in Learning	0.024	0.824	Accept Ho	No Significant Relationship
Students' Self-Efficacy in Learning Mathematics	-0.137	0.198	Accept Ho	No Significant Relationship

Table 6 shows the relationship between the Mathematics Attitude Scale of students and their Academic Performance in Mathematics. A p-value smaller than 0.05 indicates that there is a statistically significant relationship (at the 5 % level) between the two variables in the test, whereas a p-value larger than 0.05 suggests that there is not a statistically significant relationship. Since the p-values of all the areas are greater than the .05 levels of significance. In this case, the null hypothesis was accepted. Therefore, it can be concluded that learners' perceived attitude toward Mathematics are not associated with their academic performance in Mathematics.

## Discussion

Teachers are challenged to apply various strategies to provide a quality education despite the ongoing pandemic crisis. These problems include teaching the students, where it is difficult for teachers to reach out to all the students at home, even though the teachers use various forms of communication. As a result, it is difficult for them to develop the learners' skills because the learners remain at home while learning the lessons. Not all parents have the desire or ability to help their children with their studies. Negative attitudes toward math were evident, resulting in disengagement, increased anxiety, and a lack of confidence, as well as a reluctance to try to improve skills. Teachers are challenged to enhance learners' mathematical knowledge by making positive changes in their attitude towards it. Parental involvement is highly encouraged in supporting the learners to increase their academic performance in Mathematics. There is a need for healthy parental involvement, but some parents are hesitant to get involved in their children's education. Involvement between parents and teachers must be enhanced and strengthened. Families and schools shape collaborative working relationships in home-school partnerships. They can make students be more productive and consistent in their work and attitudes, which can significantly raise students' interest, motivation, and engagement in learning both at home and at school.

In modular distance learning, the top priority of teachers is to create a stimulating learning environment that will pave the way to increased engagement among learners. Students are expected to actively participate in the learning material when using this type of instruction. It offers innovative and knowledgeable suggestions and knowledge to inspire learners from various backgrounds. This is to help them develop a positive perception in certain subject areas like Mathematics. Parental involvement in children's education is essential for their academic success. It is critical to investigate how parents can assist and contribute to their children's academic success. This study can help educators and school administrators understand how to assist parents in supporting their children's education. Researchers can conduct a more specific study on how both teachers and parents help learners cope with different learning situations.

The teachers and the school head may collaborate with the parents in supporting the learners. One effective way for parents and teachers to collaborate is to



communicate the same message of safety to children openly and consistently. Teachers can call the attention of parents to determine whether the student requires additional assistance. They can collaborate to create the best possible environments for learners' physical, emotional, and intellectual well-being. At the same time, this communication must be recognized as an important part of parenting, and parents must commit to meeting with their children's teachers regularly. The school head may create a program that will stimulate parental involvement in school and at home. The result of the study may be discussed during the school learning action cell, wherein teachers can brainstorm and create programs that will help learners foster a positive attitude toward Mathematics. It can also be addressed during the parent-teacher conference; this way, parents can be informed about their role and encouraged to implement parental involvement strategies that will most likely help learners improve their academic performance in Mathematics.

## Conclusion

Teachers employed multiple teaching strategies, ICT skills, assessment and evaluation skills, interpersonal skills, and self-management skills in supporting the students learning in Mathematics. Most of the learners of grade 4-6 obtained a grade between 85-89, which is described as having a "Very Satisfactory Performance" during the school year 2021-2022. Perceived attitudes of learners toward Mathematics do not affect their academic performance in Mathematics. A closer look at the result of the correlational analysis wherein students perceived attitudes in Mathematics such as (a) Motivation and Support, (b) Anxiety in Learning, (c) Self-Efficacy in Learning Mathematics do not significantly affect their academic performance in Mathematics as these perceived attitudes got a significant level of greater than 0.05, therefore, the null hypothesis was accepted. Students' academic performance in Mathematics increases when there are mentoring strategies done at home by their respective parents or guardian. This is based on the result of the correlational analysis which shows that among the four parental involvement strategies (a) Mentoring Strategies, (b) Parental Involvement Strategies, (c) Awarding and Recognition Strategies, (d) Awarding Scheme Strategies, it was the only the mentoring strategies that significantly affect the academic performance of learners in Mathematics;  $p=0.016 (< 0.05)$ , which means a p-value smaller than 0.05 suggests that the correlation is statistically significant (at the 5 % level).

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## Affiliations and Corresponding Information

### Benjamin F. Mijares III

Bungahan Elementary School  
Department of Education - Philippines